the Lawas River, where they are not uncommon, but on the Trusan and Brunei Rivers, which lie close to, the species is quite unknown to the natives, even by name.

THE Liverpool Geological Society held its first annual meeting of the session on the 10th instant, when the retiring president, Mr. T. Mellard Reade, C.E., F.G.S., delivered his annual address. The subject was an interesting one, being a calculation of the amount of solid matter removed annually from the surface of England and Wales in solution, in rain, or rather river water. The result of the calculations, which were of an elaborate nature, founded upon the analysis of water given by the Rivers' Pollution Commission in their Sixth Report, and the rainfall chart prepared by Mr. Symons, showed that it would take 13,000 years to remove, in this manner, one foot in depth of solid matter over the entire surface of England and Wales. This calculation was compared with others prepared by Mr. Reade, of the soluble denudation of the great river basins of Europe, viz., the Danube, the Rhine, and the Rhône. As throwing light upon the age of sedimentary deposits, the calculations taken, together with the amount of matter annually brought down in river water in suspension in the form of mud, are extremely interesting, and Mr. Reade deduced from them that the minimum amount of time which must have elapsed since the first sedimentary rocks we know of were laid down is, in round numbers, 500 millions of years, thus supporting the views of Lyell, Hutton, and other great geologists, as to the immense age of the world.

WE have on our table the following books:—"The River Clyde," by James Deas (J. Maclehose). Piddington's "Sailor's Horn-Book," 6th edition (Fredk. Norgate). "Spiritualism," Prize Essays. "Chemia Coartata; or, the Key to Modern Chemistry," Dr. A. H. Kollmyer (Churchill). Heer's "Primæval World of Switzerland," edited by James Heywood, 2 vols. (Longmans). Oscar Peschel's "Races of Man" (H. S. King and Co.). "Text-book of Veterinary Obstetrics," by George Fleming, Parts I. and II. (Baillière, Tindall, and Cox). "A Study of the Rhætic Strata of the Val de Ledro in the Southern Tyrol," by T. Nelson Dale. Three more volumes of Stanford's "British Manufacturing Industries."

FROM the 18th inst. numerous spots have been observed on the sun, and a large number of protuberances detected round the disc by means of the spectroscope. The observations have been made at Brussels by Monkhoven, and reported daily in the *Independance Belge*.

A NEW and enlarged edition of Hayden's "Dictionary of Dates" is in the press, bringing the book down to this autumn. It is being thoroughly revised and corrected under the hands of Mr. Vincent, of the Royal Institution.

MR. MURRAY will publish during this autumn, "A Life of Thomas Edward, A.L.S., a well-known Scotch Naturalist," by Mr. S. Smiles, author of "Self-Help." The book will contain a portrait etched by Rajon; "The Effects of Cross and Self-Fertilisation in the Vegetable Kingdom," by Charles Darwin, F.R.S., and a new edition of "Kirke's Handbook of Physiology," by Mr. W. M. Baker. In this book many chapters have been rewritten, and about 160 new illustrations added.

WE are glad to find that a second edition of Mr. James Geikie's work, "The Great Ice-Age," has been called for. A considerable number of alterations have been made, and some parts have been almost re-written. Daldy, Isbister and Co. are the publishers.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus erythræus*) from India, presented by Mr. M. Almond; a Grivet Monkey (*Cercopithecus griseo-viridis*) from North-east Africa, presented by Mr. T. T. Sich; three Palm Squirrels (*Sciurus palmarum*) from India, presented by Mr. Henry Grey; a Collared Peccary (*Dicotyles tajaçu*) from Venezuela, presented by Mr. C. J. Sims; a Greater-spotted Woodpecker (*Picus major*) European, presented by Mr. Henry Laver; a Magpie Tanager (*Cissopis leveriana*) from Brazil, purchased.

SCIENTIFIC SERIALS

Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg, t. xx. Nos. 3 and 4.—From these parts we note the following papers:—On an artificial way of producing snow crystals, by J. Dogiel.—On the appearance of Encke's comet in 1875, with remarks on the existence of a resisting medium in the celestial space, by E. von Asten.—On a remarkable motion observed in a very sensitive level, by H. Romberg.—On the property of the *sphagnum* of marshes, to absorb liquid water and water vapour from the atmosphere, by N. Geleznof.—On the determination of the brightness of fixed stars by means of Zoellner's photometer and gradual elevation, by Ed. Lindemann.—On pentamethylethol and its derivatives, by A. Boutlerow.—Diagnose of new plants of Japan and Mandshuria, by C. J. Maximowicz (tenth part; this treatise is in Latin).—On the mean curvature of planes, by Ferd. Minding.—Some observations on reflex movements, by J. Setchenow.—On three new pinacolines, by A. Wischnegradsky.—On some derivatives from lepidene, by N. Zinin.—On the calculation of the elliptical orbit by means of the two radii vectores r and r', of the angle $2f$ they enclose, and of the time t between the two observations of the planet, by M. Kowalski. —T. xxi. Nos. 1 to 4.—From these parts we note the following papers:—Researches on the rabbit (*Lepus cuniculus*), from a zoo-geographical and palæontological point of view, by J. F. Brandt.—Some observations on the sexual glands of insects, by Dr. A. Brandt.—On dimethylparabanic acid, and on succid-cyanic ethers, by N. Mentschutkin.—On the orbit of the double star Σ 1728=42 Comæ Ber., by O. Struve.—On the observations of the planets at St. Petersburg, by A. Sawitsch.—Results of measurements made on dolomite, barytes, titan-iron, and zinc blende crystals, by N. Kokscharow.—Researches on blood, by H. Struve.—On some derivatives from lepidene, by N. Zinin.—Analysis of the coal newly discovered at Gelazk, in Imeretia, by Heinr. Struve.—On the remains of extinct rhinoceros found in Russia, by J. F. Brandt.—On a new siphon barometer, by H. Wild.—Some observations made based on the theory of primordial cellular leaves in the vegetable kingdom, by A. Famintzin. —On an anemometer provided with a simple apparatus to measure the force of the wind, by H. Wild.—On the transformation of some hydrocarbons in the ethylene series and the corresponding alcohols, by M. Boutlerow.—On the milky sap of *Cyanchum acutum*, L., by the same.—On diphenylcarbinol and some of its derivatives, by A. Zagumennoy.—Osmotic phenomena produced in vegetable and animal cells by the action of ether, by H. Struve.—On the curves of the smallest perimeter on surfaces of revolution, by Prof. Minding.—Speech delivered at a public meeting of the Academy on December 29 last, in praise of the late Prof. Jacobi, by H. Wild.—On the question whether the Karian sea can be looked upon as an ice-cellar, by K. E. van Baer.—Report on the memoir by M. Wex on the diminution of waters in sources and rivers, by MM. Helmersen and Wild.—Experimental Researches on some functional properties of the smaller brain, by Ph. Owsiannikow and W. Weliky.—Photometric researches concerning the diffused light of the sky, by H. Wild.—On the double star Σ 2120 = Herculis 210, by O. Struve.—On the action of zincethyl on acetaldehyde, by G. Wagner.—Additional remarks by K. E. van Baer, on the memoir on the law of the formation of river beds. —T. xxi., No. 5 contains only a few papers of interest. We note the following:—On the mineral substances containing paraffin in the peninsula of Apcheron, by H. Abich.—On the properties of Leuchtenbergite under the microscope, both in its pure and in its metamorphosed state, by Duke Nikolas, of Leuchtenberg.—Microscopical properties of the Indian green aventurine, by the same.—On the chemical composition of dialurates, by N. Menschutkin.—On the morphology of *Ulothricheæ* (a genus of *Algæ*), by L. Cienkowski.

Revue des Sciences Naturelles, tome v. No. 1.—In this number M. Collot carries out in the plant-kingdom a line of inquiry that has been prosecuted in the animal. He shows that many plants before reaching their final form pass through forms very different from that; these young forms lack special character and show the average and most common conformation of the group to which the plant belongs (Australian Acacias, &c.), or serve to

connect the most numerous species of a genus with species which have exceptionally retained in a permanent way the original arrangement (flax). They are more remarkable the greater the differentiation of the adult with reference to neighbouring groups (pines); and the order of appearance of fossil forms in strata is the same as the succession of forms in the same individual.—In a paper on absorption of bicarbonates by plants, M. Barthelemy finds that in natural waters, plants absorb more water than bicarbonate except when rapidly dried or in the flowering season. The quantity of bicarbonate absorbed, for the same absorption of water, varies with the nature of the plant. At night and in water saturated to the same degree, plants excrete a part of the bicarbonates absorbed during the day. The roots of plants give back carbonic acid, which maintains the bicarbonates saturated.—There are also papers on the development of insects, and on development of the embryo of *Nelumbrium speciosum*, and M. Bechamp, in a lengthy paper, attacks the doctrine of evolution.

FROM the *Naturforscher* (August, 1876) we note the following papers:—On the physical condition of Saturn, by L. Trouvelot.—On the spreading of drops of liquids into thin layers, by F. Cintolesi.—On a new fundamental law in electro-dynamics, by Prof. Clausius.—On the natural means of protection of flowers against their animal destroyers, by Herr A. Kerner.—On the action of light upon the electric behaviour of metals in water, by W. Hankel.—On the influence of shape upon the magnetism of soft iron cylinders, by Dr. Christoph Ruths.—On the phenomena of motion and electricity in the leaf of *Dionæa muscipula*, by Herr Hermann Munk.—On the magnetism of cobalt and nickel, by W. Hankel.—Phenomena of interference of light passing through two dimmed planes, by K. Exner.—On allotropic states of gold, by Julius Thomsen.—New inorganic cells, by Ferd. Cohn.—On the influence of gravitation upon the development of adventive roots and shoots, by L. Kny.—On the theory of the optical power of crystals of turning the plane of polarisation of light, by Herr Sohncke.—On the physical nature of the sun, by Herr O. Lohse.—On the diffusion of gases by absorbing substances, by S. von Wroblewski.—On electric light, by Herr E. Goldstein.—Further researches on the peptone-forming ferments in the vegetable kingdom, by E. von Gorup-Besanez and H. Will.—Arrangements for the protection of chlorophyll in living plants, by Julius Wiesner.

Mittheilungen der naturforschenden Gesellschaft in Bern, 1875, Nos. 878-905. From these parts we note the following papers: On the changes of generation in the animal kingdom, by J. Fankhauser.—On some observations of the sources and wells in the district of Bern, during the years 1872-4, by R. Lauterburg.—Topographical sanitary notes on the same district, by Dr. A. Ziegler.—On a multiple telegraphing apparatus, by Herr Rothen.—The greatest part of the publication is taken up by a very elaborate list of the plants growing in the Berner Oberland, by Prof. L. Fischer.

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, October 16.—Vice-Admiral Paris in the chair.—The President referred to the sad loss sustained by the Academy in the death of M. Sainte-Claire Deville, and M. Dumas spoke on his life-work. The following papers were read:—Intra-Mercurial planets (continued), by M. Le Verrier.—Exploration of the whole of the coast which forms the gulf of the two Syrtes, by M. Mouchez. The extent of coast surveyed is 200 leagues. The work was difficult, owing to the nature of the land (banks and dunes of sand) and the hostility of the natives. This work fills the gap left by English hydrographers, who had stopped at Sfax, the last town of Tunis, and resumed at Berghazi, on the Egyptian frontier.—Itinerary of the double voyage of M. Nordenskjöld between Norway and Siberia, in 1876, in the *Eymer*, by M. Daubrée. The rapidity of this voyage is striking, twenty-four days from Norway to the mouth of the Jenisei and eighteen days home.—On the relation of the two specific heats of a gas, by M. Simon. *Perfect* gases are those which follow the laws of Mariotte and Gay Lussac. *Simple* and *tetratomic* gases are those whose molecules are formed of four smaller molecules, all alike, which may be treated as atoms (such appear to be hydrogen, oxygen, nitrogen, &c.). In such a gas he imagines the four atoms to occupy the summit of a regular tetrahedron, the side of which is greater than the diameter of any of them, and the interior of this tetrahedron filled with free or condensed ether. Taking account of the rotation of each elementary tetrahedron about its centre of gravity and regarding the vibrations of the atoms as *nil* or insensible, he has found the ratio of the two specific heats exactly $\frac{7}{5}$, or 1·40; while experiment gives values between 1·39 and 1·42. Hence may be inferred that the interior vibrations are really negligible, and in simple gases the physical molecules seem to remain sensibly invariable, so long as no electrical or chemical phenomena are produced.—Note on the presence and origin of Phylloxera in Orleans, by M. Mouillefert. There are facts to show that in advancing towards the northern limit of cultivation of the vine, the phylloxera is less rapid in its action; still the vine is none the less doomed to certain death; it is only a question of time.—Remarks on a recent note of M. Lichtenstein, on the reproduction of phylloxeras, by M. Balbiani.—Study of comparative analyses of several varieties of American stocks, resistant and non-resistant, by M. Boutin. He has found in all American stocks a resinoid principle; it exists also in French stocks, but in quantity a half less than in the resistant American stocks, and a third less than in the non-resistant. He accounts for the resistance by presence of this principle in a proportion not under 8 per cent. in the entire root, and 14 to 15 per cent. in the bark alone. The prick made by the insect, while causing nodosities on the root, is cicatrised by exudation of the resinous product; and this prevents loss of the nutritious juices of the plant. No such cicatrisation occurs in the non-resistant stocks, the resinous matter not being abundant enough. Perhaps the malic acid in the roots of American vines also contributes to their resistance.—Note on the velocity of propagation of waves, by M. Laroche.—On the chiselling action of acids on various metals, by MM. Trève and Durassier. The figures produced are in relation, not with the interior structure, but with the exterior action of bubbles of gas liberated during the reaction of the acids.—Combination of chloral and acetic chloride, by MM. Curié and Millet. Heated to 100° they unite (about half of the two bodies after twelve hours' heating); there is one molecule of each, and the bodies are simply juxtaposed. Subjected to nascent hydrogen, the body loses two atoms of chlorine and gives a new compound, which may be considered acetic chloride united with monochlorised aldehyde.—On a sulpho-antimoniuret of lead found at Arnsberg (Westphalia), by M. Pisani.—Observations on the origin of eruptive, vitreous, and crystalline rocks, by M. Lévy. His experiments are against Meunier's view that crystalline rocks are derived from vitreous rocks by way of devitrification. Most natural crystalline rocks owe their internal texture to *promorphic* phenomena, that is, phenomena anterior to their consolidation; secondary actions are also important, but they rarely quite mask the original texture of a rock.—On the comparative influence of leafy woods and of resinous woods on the temperature and ozonometric state of the air; consequences as regards climate, by M. Fautrat. Woods of both kinds have a refrigerant power, more marked in the resinous. The phenomena of assimilation and transpiration in leaves are accompanied by a fall of temperature. Above pines the maximum temperatures are always higher, and the minimum always lower, than outside; the phenomena lowering temperature on leafy trees are masked in pines, by others producing heat. Under woods, especially the resinous, there is less ozone than on open ground.

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